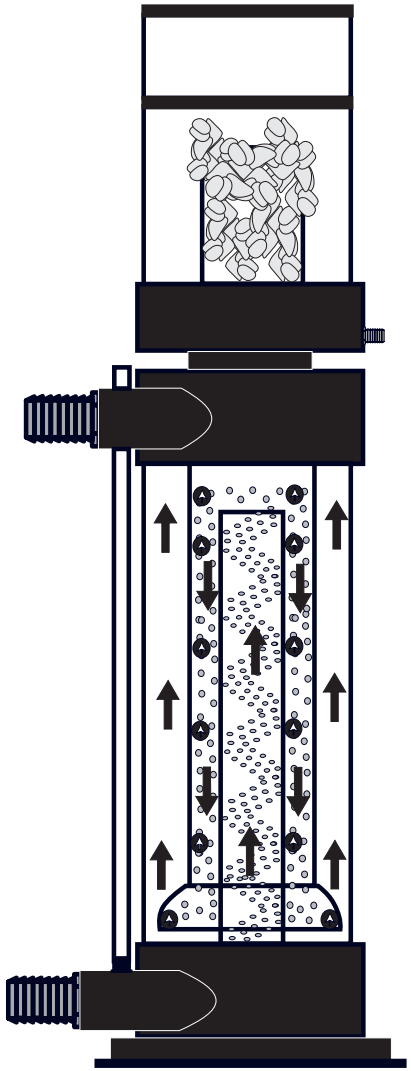
RED SEA'S BERLIN SKIMMERS

Installation & Operation Manual



Red Sea

Dear Marine Aquarist,

Congratulations on purchasing Red Sea's Berlin Skimmer.

The Red Sea Berlin Skimmer incorporates patented technology developed for aquaculture by the Julich Centre of the German Institute for Biotechnology.

Named after the Berlin School (the original proponent of protein skimming) whose reef tanks are world renowned, the Red Sea Berlin Skimmer has all the features essential for efficient protein skimming as well as some unique and patented features that make this compact unit one of the most efficient skimmers on the market.

Constantly expanded and improved, the Berlin family of Skimmers have been in use by thousands of satisfied Aquarists around the world since 1993.

To get the maximum benefit from this protein skimmer, follow the instructions and recommendations contained in this manual.

If you experience any difficulties in operating your skimmer or have any questions of a more general nature, do not hesitate to contact Red Sea either directly or through our representatives.

Research Department
Red Sea Fish Pharm Ltd.

Installation and Operation Manual
For
Venturi and Turbo Skimmers
Classic, Hang-on & XL configurations

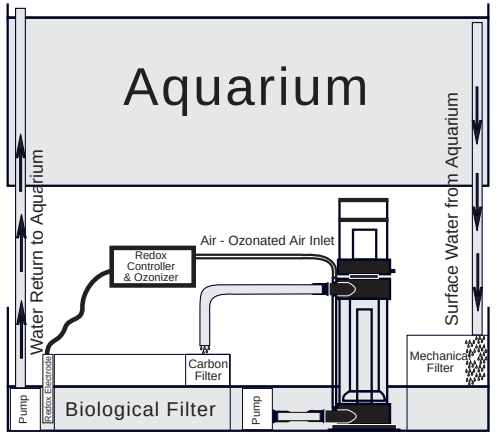
Contents

1. Introduction to Protein Skimming

What is Protein Skimming ?
Protein skimming (also called foam fractionation) can be considered as a form of mechanical filtration, since it is purely a physical process of removing substances from water, without any chemical reaction. While a mechanical or pre-filter removes particles (e.g. uneaten fish food), a Protein Skimmer removes suspended or dissolved organic waste and invisible particles from the aquarium water.

The advantage of Protein Skimming lies however in the fact that waste material is continuously removed, separating it from the water flow. It is then collected into a foam cup, where it is no longer in contact with the aquarium water. In contrast, the dirt collected in a mechanical filter stays in contact with the water flow. A mechanical filter should therefore be cleaned very regularly, otherwise bacteria will decompose the collected dirt into harmful dissolved organic material.

Ideal Water treatment for Marine Aquariums



Mechanical Filter: Removes organic particles
Protein Skimmer: Removes suspended & dissolved organic materials
Carbon Filter: Removes Stains & organic Toxicants
Biological Filter: Oxidation of Ammonia & Nitrite to Nitrate

A successful marine aquarium should have both a regularly cleaned mechanical filter and an efficient Protein Skimmer as the first and second stage in the water treatment.

Why is Protein Skimming important ?
A Protein Skimmer is a very important tool in reducing the amount of dissolved organic material in the aquarium water. This material consists of protein fragments and other waste, produced by the living organisms in the marine aquarium. Since these are potentially harmful to the aquarium inhabitants, rapid removal is essential.

Efficient removal of dissolved waste also helps to:
a) Reduce the amount of harmful floating bacteria, since bacteria need dissolved organic material to grow and reproduce.
b) Reduce the yellow discoloration of your aquarium water.
c) Limits nitrate and phosphate build up, since immediate removal of waste, prevents bacterial breakdown to nitrate and phosphate in the biological filter.
d) Prevents the development of slime algae (cyanobacteria, or blue green, algae). The main food source (dissolved organic material, nitrate and phosphate) of these primitive algae is kept in very low concentration.

How does a Protein Skimmer work ?
The waste products are surface active substances (surfactants), which assemble at air/water surfaces in a one molecule thick layer. Sometimes this can clearly be seen in an aquarium when the powerheads are switched off, waste is present as a thin oily layer on the water surface.
Inside a good Protein Skimmer a very large air/water contact area is created by blowing numerous fine air bubbles into the seawater. Protein molecules and other organic matter, assemble on the surface of these bubbles. As the protein covered bubbles rise to the water surface of the Skimmer, a protein rich foam is formed, which is pushed into the collection cup, by the constantly administered air.

2. Features of Red Sea's BERLIN Skimmers

The Berlin is available in the Classic, Hang-on or XL configurations with a choice of either Venturi or Turbo (motor driven) air injector.

2.1 Berlin Skimmer Reactor

Berlin Skimmers incorporate the Patented Technology (developed by the Julich Research Center of the German Institute for Technology), which has resulted in a unique, compact design that is more effective than Skimmers twice their size. Features include:
a) **Triple Air Pass** Increases the contact time between the air bubbles and water, due to the patented "Air Return Skirt".
b) **Tangential Water Inlet**, causes turbulent flow and a swirling motion that increases the mixing action of the water and air bubbles.
c) **Removable Collection Cup & Inner Tubes** for easy cleaning and maintenance.
d) **Optimal Compactness**, without compromising the skimming efficiency. Performs as well or better than skimmers twice their size. Performance is measured as the total amount of concentrated waste material removed daily.
e) **Efficient Concentration** produces highly concentrated waste without unnecessary loss of seawater.
f) **Ability to concentrate and remove** even the smallest amounts of waste material. The Red Sea BERLIN Skimmers show skimming activity at waste levels where other models fail to work. This is very important for a reef aquarium.

2.2 Venturi Air Injector

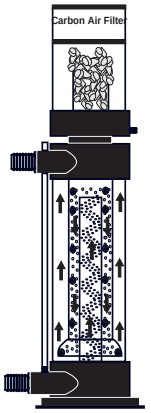
The traditional venturi air injector allows the Berlin (Classic and XL models) to be run from an external pump or submersed pump. The ozone resistant parts, optional carbon air filter above the collection cup and air return skirt that ensures that no air bubbles return to the aquarium make these models ideal ozone reactors.

2.3 TurboJet Air Injector

The new TurboJet air injector with its unique 12 blade impeller provides an increased quantity of superfine air bubbles in a powerful, homogenous air water mixture. Without the small flow path required by the venturi models the Turbo Air injector is less susceptible to blockages by particulate matter.

3. Principle of Operation

The Venturi or TurboJet air injectors produce a continuous stream of fine air bubbles mixed into the water flow, which is introduced tangentially to the bottom section of the skimmer chamber. The tangential water inlet causes a powerful rotation of the Air/Water mixture. Air bubbles and waste are concentrated in the center of the inner tube, ensuring good mixing and maximum surface contact. This is the first step in efficient waste separation.
The Air/Water mixture swirls up the inner tube and into the wider diameter middle tube, causing a relaxation of the turbulent water and a separation of protein rich foam at the water surface. The protein rich foam is pushed up into the foam collection cup by the constant air supply. Air bubbles are transported down the middle tube by the force of the water current. The middle tube ends with the Air Return Skirt. This funnel shaped part enlarges the diameter of the middle tube thus decreasing the speed of the water such that it is no longer capable of transporting the air bubbles.
The bubbles, with their collected waste materials, rise up again, against the downward water flow. Thus the air has a triple-pass in the skimmer's reaction chamber.



The third pass (of air through the skimmer) works according to the "counter current" principle. On their way up, the air bubbles collect more waste materials, since they constantly bump into downward moving bubbles, a further increased contact time and mixing occurs. The smallest amounts of waste are stripped from the water, thereby greatly enhancing the efficiency of these skimmers.

The protein stripped water then leaves the skimmer via the outer tube without any bubbles. This is extremely important when applying ozone, since ozone gas is thereby prevented from being introduced into the aquarium.

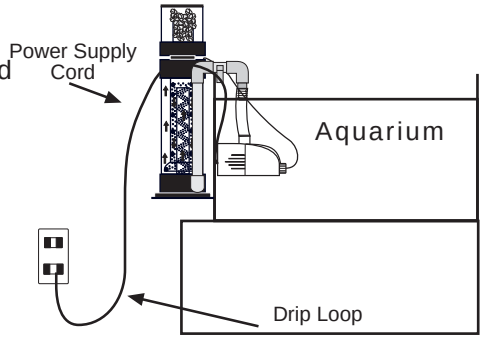
To complete the safe use of ozone a carbon filter is provided to prevent ozone from passing from the reaction chamber to the atmosphere.

4. Pump Selection

All Turbo models are supplied with the Berlin Turbo pump including the 12 blade TurboJet impeller and combined air inlet / water flow regulator.
Venturi models are supplied with or without (see check box on package) the optional Berlin pump which can also be purchased separately. If you have not purchased a Berlin pump select a pump as defined below. If the pump is to be located more than 8" (20cm) from the Venturi inlet a higher rated pump may be required.
Berlin Venturi HO & Classic Model :
500 gallons per hour (2000 liters per hour), 10 ft (3 meter) water or 4.3 psi
Berlin Venturi XL Model :
550 gallons per hour (2200 liters per hour), 10 ft (3 meter) water or 4.3 psi

5. Safety

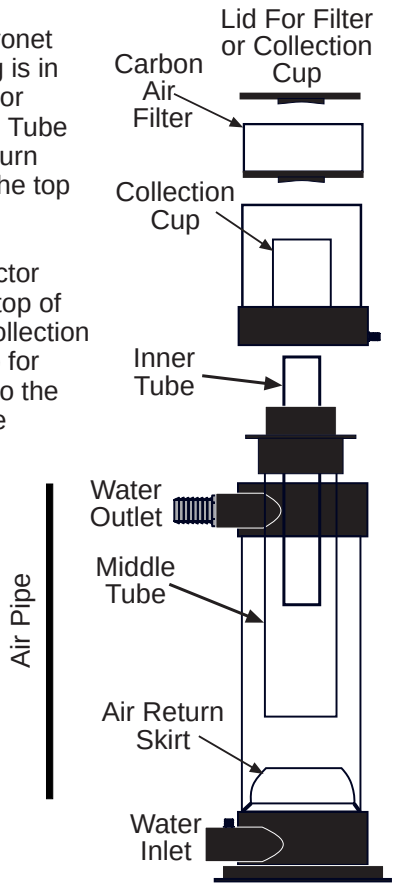
IMPORTANT SAFETY INSTRUCTIONS
WARNING - To guard against injury, basic safety precautions should be observed, including the following.
READ AND FOLLOW ALL SAFETY INSTRUCTIONS.
a) **DANGER** - To avoid possible electric shock, special care should be taken since water is employed in the use of aquarium equipment. For each of the following situations, do not attempt repairs yourself; return the appliance to an authorized service facility for service or discard the appliance.
b) Do not operate any appliance if it has a damaged cord or plug, if it is malfunctioning, or if it is dropped or damaged in any manner.
c) To avoid the possibility of the appliance plug or receptacle getting wet, position the aquarium stand and tank to one side of a wall mounted receptacle to prevent water from dripping onto the receptacle or plug. A "drip loop" shown in the figure, should be arranged by the user for each cord connecting an aquarium appliance to a receptacle. The "drip loop" is that part of the cord below the level of the receptacle, or the connector. Use an extension cord if necessary, to prevent water traveling along the cord and coming into contact with the receptacle. If the plug or receptacle does get wet, DON'T unplug the cord. Disconnect the fuse or circuit breaker that supplies power to the appliance. Then unplug the device and examine for presence of water in the receptacle.



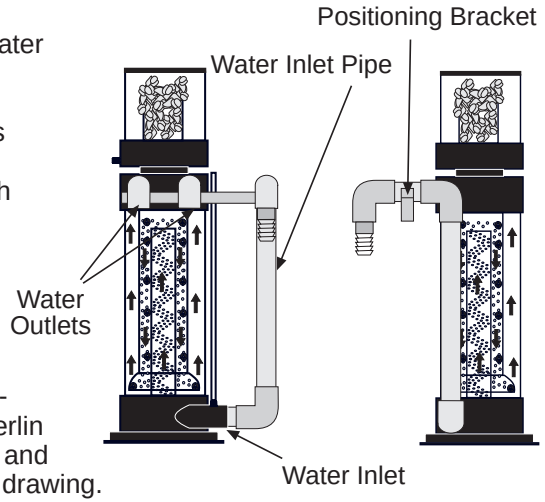
d) Close supervision is necessary when any appliance is used by or near children.
e) To avoid injury, do not contact moving parts.
f) Always unplug an appliance from an outlet when not in use, before putting on or taking off parts, and before cleaning. Never yank the cord from the outlet. Grasp the plug and pull to disconnect.
g) Do not use an appliance for other than intended use. The use of attachments not recommended or sold by the appliance manufacturer may cause an unsafe condition.
h) Do not install or store the appliance where it will be exposed to the weather or to temperatures below freezing.
i) Make sure an appliance mounted on a tank is securely installed before operating it.
j) Read and observe all the important notices on the appliance.
k) If an extension cord is necessary, a cord with a proper rating should be used. A cord rated for less amperes or watts than the appliance rating may overheat. Care should be taken to arrange the cord so that it will not be tripped over or pulled.
SAVE THESE INSTRUCTIONS

6. Assembly Instructions

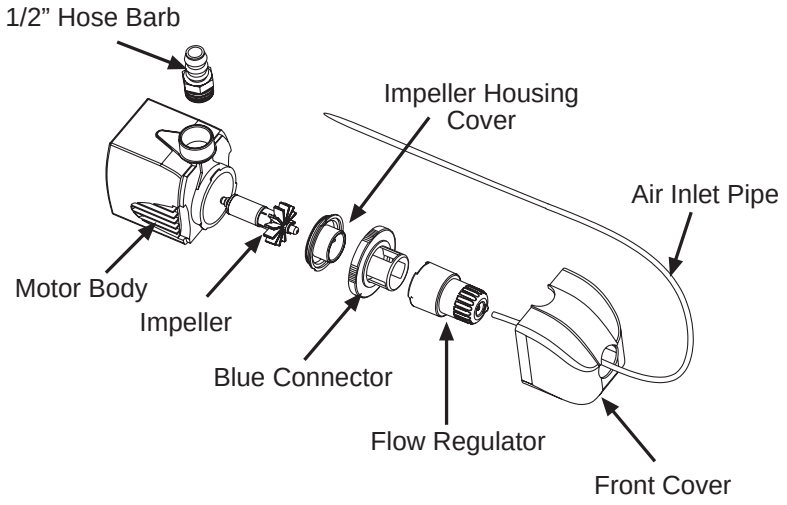
a) Unpack the box carefully and disassemble the unit to familiarize yourself with the component parts. Remove all protective packaging materials.
b) Insert the inner tube into the center of the reactor body ensuring that the end with the baffle (rectangular plate located at one end of the inner tube) is at the bottom of the unit. The inner tube should sit inside the center ring of the air return skirt.
c) Insert the middle tube into the black bayonet connector. Ensure that the connector o-ring is in place and insert the Middle Tube / Connector assembly into the reactor body. The Middle Tube should sit inside the outer ring of the Air return skirt while the Connector should sit inside the top of the Reactor Body. Rotate the Connector clockwise to lock into position.
d) Place the collection cup onto the connector until it is seated firmly. Place the lid on the top of the Collection Cup. On some models the collection cup has a drain hole fitted with a hose barb for a waste pipe. Either connect a waste pipe to the hose barb or replace the hose barb with the plug supplied with the unit.
e) **Ozone Reactor** - If the Berlin is to be used as an ozone reactor fill the Carbon Air Filter approximately 2/3 full with active carbon and place between the Collection Cup and the Lid.
f) **Venturi air injector models only** - The venturi air injector is located in the water inlet at the bottom of the Reactor Body. For ease of cleaning and the prevention of blockages the inlet side of the venturi (Venturi Cone) isremovable. Using the Venturi Key provided, remove and thereafter reinsert the Venturi Cone.
g) **Classic & XL Models only** - Connect the ½" hose barb with o-ring to the Water Inlet located at the bottom of the Reactor Body.
Care should be taken not to exert unnecessaryforce on the skimmer's water inlet pipe during assembly.
If a ridged connection is to be used instead of the hose barb provided use teflon tape to seal the connection.
Warning: excessive force can damage the water inlet.



h) **Hang-on models only** - Screw the Inlet Pipe into the water inlet located at the base of the Reactor until the connection is hand tight and the hose barb is parallel with the water outlets. The thread is pre-prepared with Teflon tape to seal the joint. Snap the positioning bracket onto the underside of the water inlet and the farthest water outlet as shown in the drawing.



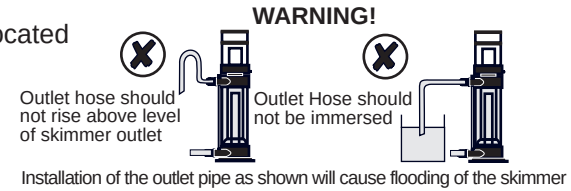
i) **TurboJet Pump assembly** - Familiarize yourself with the Berlin Turbo Pump by disassembling and reassembling according to the drawing. Insert the ½" hose barb into the outlet located on the top of the pump. Using the ½" Flexible tube provided connect the Outlet Hose Barb of the pump to the Inlet Hose Barb of the Reactor. According to your installation option cut the Flexible tube to the shortest possible. Connect the free end of the air pipe (the fixed end is attached to the Reactor by the Airflow Adjustment Screw) to the hose barb located at the front end of the Turbo Pump Flow Regulator. For Hang-on units use the cable ties provided to fix the Air Pipe to the Inlet Pipe. Do not overtighten as this will cause a restriction to the air flow.



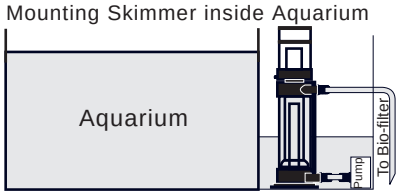
j) **Venturi Pump assembly** – Connect the Berlin Pump or alternative to the Reactor using the ½" Flexible tube provided. According to your installation option cut the Flexible tube to the shortest possible. For pumps stronger than the Berlin Pump or pumps without positive flow regulation it is recommended to connect a valve between the pump and the Reactor.

7. Installation

Positioning the Skimmer - Optimal efficiency of your protein skimmer is obtained, when it is fed by surface water. This will significantly increase the performance, since dissolved waste material tends to concentrate at the water surface of the aquarium. It is advantageous to lead this surface water through the skimmer, before it flows through the bio-filter. This is to prevent loss of organic material by absorption and bacterial action in the bio-filter.

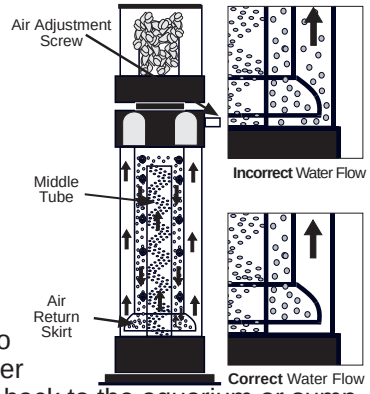


The Berlin Reactor can be located either internally or externally to your aquarium or filter sump. For Venturi models the pump can also be internal or external.
For Turbo models the TurboJet pump must be submersed.
The out flowing water cannot be subject to any back pressures. Irrespective of how the skimmer is installed the out flowing water cannot be raised above the level of the Reactor outlets, also the outlet tubes must end above the water line of the aquarium or filter sump. Failure to comply with these requirements will cause flooding of the skimmer. Care should be taken not to block the water out flow stabilizers (vent pipes located above the water outlets), which prevents a siphoning effect occurring in the water outlet tubes.
The water outlets should be directed away from the Skimmer pump, to prevent re-circulation of protein free water.
When locating the Reactor and/or pump externally it is advisable to secure all flexible pipe connections with hose clamps.
The Venturi models can also be operated by branching off part of the water flow of a large circulation pump. In this case a flow reduction valve should be connected at the inlet of the Reactor.
Classic & XL models - The ideal place is in a sump that collects the water from the aquarium, before it enters the bio-filter. The Skimmer can however also be placed in the filter sump where your aquarium circulation pump is located. Optimally the pump should be under approx. 6" to 8" (15-20cm) of water.

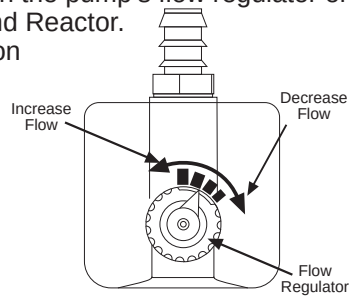


When you wish to use the Skimmer inside the aquarium, the best option is to build a compartment for the Skimmer with an overflow such that the Skimmer receives surface water. The water level in the overflow compartment should be regulated with a tap in the pipe that leads to the bio-filter.
Hang-On – Select a position on the outside of the aquarium that allows easy access to the flow regulator or the pump. This is particularly important for the Turbo models. Hang the Skimmer as desired and slide the positioning bracket against the wall of the aquarium to hold the Skimmer in place. The pump should be suspended from the Inlet Pipe under 2" to 3" (5 – 7.5 cm) of water.

8. Operati on



With the Skimmer located in the desired position set the pump flow regulator to maximum and the Air Adjustment Screw to fully open. (Note: If you have an external pump you may need to fill the Reactor with seawater in order to prime the pump.)
To operate the Skimmer plug the power cord of the pump into the power outlet socket ensuring that the power cord has a drip loop. The water/air mixture will immediately begin to fill the Reactor from the Inner Tube to the Outer tube and eventually through the water outlets back to the aquarium or sump. For optimal performance of the skimmer, the flow should be adjusted so that no air bubbles are carried with the water flow under the Air Return Skirt to the Outer Tube. Due to various aquarium conditions the optimum settings may produce a wet instead of dry foam causing “Over-skimming” wasting a lot of seawater unnecessarily. In such a case the flow should be further reduced until dry foam is produced.
Venturi Flow Regulation - Water flow need only be adjusted if the pump is too strong and causes flooding of the Skimmer. This is identified by water flowing out of the water out-flow stabilizers (vent pipes located above the water outlets). In such an event reduce water flow with the pump’s flow regulator or additional regulator fitted between the pump and Reactor.
Rotating the airflow adjustment screw located on the side of the Reactor reduces the airflow rate through the Skimmer. When reducing airflow, make small adjustments and wait a few moments for the air-flow to stabilize.
Turbo Flow Regulation – Regulation of the flow is achieved primarily by adjusting the Flow Regulator on the Berlin Turbo Pump. Fine adjustments can thereafter be achieved by the Air Adjustment Screw.



Flow Regulation

Rotating the Flow Regulator clockwise (reducing flow rate) will at first prevent the air bubbles from passing under the Air Return Skirt and thereafter will raise the height of the air/water mixture in the middle tube. Restricting the air-flow slightly by turning the Air Adjustment Screw will lower the height of the air/water mixture in the middle tube. When adjusting the flow, make small adjustments and wait a few moments for the air flow to stabilize.With the Flow Regulator set to maximum (as instructed above) the air bubbles will flow under the Air Return Skirt to the Outer Tube. Adjust the Flow Regulator so that the air/water mixture is approx. half way down the middle tube. Close the Air Adjustment Screw slightly to lower the air/water mixture until it reaches the bottom of the Air Return Skirt without bubbles passing to the Outer Tube.
Note: The flow can be controlled solely by using the Flow Regulator (with the Air Adjustment Screw fully open) however by implementing the method described above fine adjustments can be made without having to adjust the Flow Regulator.

9. Effects of a newly installed Skimmer

At low dissolved protein concentrations, all Protein Skimmers work more efficiently, (remove a higher percentage of the tank’s waste products). The waste material removed by the Protein Skimmer will be more concentrated (darker), than at higher protein concentrations.

At high concentrations of waste material a lot of foam is produced that is pushed up quickly into the collection cup, without much concentration. This leads to a diluted, light colored material in the cup. The efficiency of waste removal is less in this case.

You may encounter this phenomenon when you install the Skimmer in an older aquarium, that was not skimmed before or had a much less efficient Skimmer.

During approximately the first three days after installation, the Skimmer will remove a lot of relatively light colored waste. As the Skimmer cleans up your tank, less, but more concentrated material will be skimmed off. The daily amount removed will generally stabilize, unless more fish are added or a water change is made.

10. Maintenance

To ensure a high skimming efficiency the following maintenance should be carried out every 2 weeks :

a) The collection cup, especially the part through which the foam rises should be cleaned, since settling organic matter prevents new foam from rising into the cup.

   NOTE : To prevent flooding when removing the collection cup for periodic cleaning, switch off the pump.

b) The upper black part of the middle tube should be cleaned from settling organic matter. The middle tube can be removed, however it will also suffice to wipe the black part while in place.
c) The impeller and impeller housing of the pump should be cleaned to avoid clogging and loss of water pressure.

The Following maintenance should be carried out every 2 months:

a) Cleaning the Air Pipe:
   - I) Prepare a cup of very hot water.
   - II) Run the Skimmer outside of the Aquarium.
   - III) Place the free end of the Air Pipe in the cup of hot water. The Venturi action will suck the hot water through the pipe and will also clean the airways around the Venturi Cone.

b) Cleaning the Venturi :

I) Switch off water pump and ozone.
II) Remove flexible pipe from water inlet.
III) Unscrew hose barb.
IV) insert the Venturi key, provided with the Berlin Skimmer into the water inlet and unscrew the Venturi cone. Clean it carefully and take care not to over tighten it when you put it back. After the Venturi has been removed the base unit can be cleaned by using a water jet.

NOTE : When removing the water inlet assembly in order to clean the Venturi, replace the Teflon tape on the thread with new tape before re-assembly. Failure to replace the Teflon tape may cause the joint to leak.

11. Operational Hints

It is favorable for your aquarium and the animals to feed small portions several times a day, rather than to feed a lot at once.

All Skimmers remove minerals from the water. Trace elements are replenished together with water changes especially when using advanced formulas such as “Red Sea Salt”. In addition, it is recommended to use mineral and trace element supplements regularly to prevent exhaustion.

Red Sea provides a general purpose marine Trace as well as other specific mineral additives, like Calcium, Strontium, Iodine and Molybdenum. Iodine, which is essential for corals and seaweed, is quickly exhausted when ozone is used.

12. Trouble Shooting

Problem : The Skimmer is surging or making a “burping” sound.
Solution : Back pressure is being applied to the outflow tubes, usually as the result of bent flexible tubing arched downwards. Remove the tubing or replace the arc with a 90 degree elbow.

Problem : A swirling or tornado effect is occurring in the center tube.
Solution : The plastic baffle that breaks the cyclonic action of the mixing chamber has most likely fallen out of the center tube, or it has been inserted upside down, (with the baffle at the top instead of the bottom), in this case re-place the baffle to its correct position.

Problem : The bubbles in the Skimmer are too large.
Solution : First, make sure you are using the Skimmer in salt water. Fresh water cannot be efficiently skimmed with this method. Second, check the Venturi cone by removing it and inspecting the opening for a nice smooth shape. Make sure it’s not cracked or chipped at the end, replace if necessary.

Problem : The Skimmer is new (or just cleaned), and doesn’t seem to be skimming.
Solution : If it’s new, clean it with soap and water and rinse thoroughly with hot water. If it’s just been cleaned re-rinse with water. Allow the skimmer to run for 48 hours before worrying. Skimmers react to changes in water density; soap and other chemical residue form the molding process. While this is safe for your aquarium, it does impede the Skimmer’s efficiency for a few days. Allow a 2 day break in time.

Problem : My aquarium is full of micro bubbles or air mist.
Solution : Turn the flow adjustment down on your Skimmer. Do not try to run the Skimmer with real wet foam, since this will waste a lot of seawater. Some people like to use a small foam sponge on the Water Outlets as a precaution thereby ensuring no air is returned to the sump or aquarium.

Problem : The Skimmer is producing a lot of diluted foam.
Solution : Raise the height of the air/water mixture in the Middle Tube as described above, until you obtain the desired results.

Problem : Water is leaking out of my Skimmer.
Solution : If the water is leaking from between the collection cup and the outer tube, or water is rising into the collection cup you should check that the water is able to flow freely from the water outlets. Ensure that the water has an unhindered flow under gravity and that the outlet is higher than the water level in the sump.

Problem : There is a reduction in the quantity of air bubbles in my Skimmer.
Solution : First, you should check for blockages in the air pipe. If the air pipe is clear, then the Venturi valve may be blocked, (this can only happen if the pump does not have an appropriate filter). Second, you should confirm that the pump is of the specified rating; if it is of a lower rating the pump may not have sufficient power to drive the Venturi.

Problem : Water is flowing from the water outlet stabilizer vent pipes.
Solution : Reduce the flow rate of the water at the Skimmer inlet.

13. Use of Ozone

The Red Sea BERLIN Venturi Skimmers are also very effective ozone reactors and are made of ozone resistant materials. Both the Classic & XL models come complete with a Carbon air filter (carbon not provided) to prevent Ozone gas from leaking to the atmosphere. However, please note that the Carbon air filter is not supplied as standard with the Hang-on model. If you plan to use Ozone, the Carbon air filter can be obtained free of charge from the Red Sea Office TEL: (281)447-0205 or importer.

While the patented design prevents ozone bubbles from being carried into the aquarium, an overdosing of ozone will cause the production of harmful ozonization products (chlorine, bromine etc). Therefore, it is recommended to allow the return water from the Skimmer to flow through a Carbon Filter. Furthermore, it is recommended to use Red Sea's residual Ozone Mini-Lab test, to test if the water flowing back to the aquarium is free from harmful ozonization products and that the Carbon Filter is still active.

We strongly recommend that an Ozone generator should be used in conjunction with a Redox controller. Only redox control makes it possible to apply ozone in a safe manner, since the controller automatically stops the ozone production should the redox value become too high. Red Sea's "AquaZone Plus" is a combination of ozonizer and redox controller and is well suited to work with BERLIN Skimmers.

Instructions for Ozone use

a) Connect the ozone outlet of the ozonizer to the air-inlet of the Skimmer including a one way valve in the airline.
b) Install the Carbon air filter provided (the carbon should be changed at regular intervals or when there is a smell of ozone) and water Carbon filter as recommended.
c) Set your redox controller at the desired level and switch on (see the instruction-manual of you ozonizer/redox controller). Check if air is constantly flowing through the ozonizer.

NOTE:

I) Ozonizers, air dryers, one way valves, etc., all restrict air flow, or if a water pump with lesser specifications than advised is used it might be necessary to use an additional air pump to ensure maximum efficiency.
II) When ozone is used, the skimmed material in the foam cup is often colorless, due to the bleaching properties of ozone.

14. Warranty

Red Sea Fish Pharm Aquarium Products Limited Warranty

The limited warranty sets forth all Red Sea Fish Pharm LTD (Red Sea) responsibilities regarding your product. There are no other express or implied warranties from Red Sea.

Red Sea warrants your product against defects in materials and workmanship for a period of 12 months from the date of original purchase and will repair this product free of charge (not including shipping costs) with new/rebuilt parts. In the event that a problem develops with this product during or after the warranty period contact your dealer or Red Sea (at the company address indicated) for details of your nearest authorized service center.

This warranty is extended only to the original purchaser. Proof of date of purchase will be required before warranty performance is rendered.

This warranty only covers failures due to defects in materials or workmanship which occur during normal use. It does not cover damage which occurs in shipment or failures which result from misuse, abuse, neglect, improper installation, or operation, mishandling, misapplication, alteration, modification or service by anyone other that an authorized Red Sea service center.

Red Sea shall not be liable for incidental or consequential damages resulting from the use of this product, or arising out of any breach of this warranty. All express and implied warranties, including the warranties of saleability and fitness for a particular purpose, are limited to the applicable warranty period set forth above.

These statements do not affect the statutory rights of a consumer.

USA

Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusions or limitations may not apply to you.

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Red Sea

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